

WHAT IS CLAIMED IS:

1. An object-detecting system for a vehicle, comprising a transmitting/receiving means for transmitting an FM-CW wave and receiving a wave resulting from the reflection of the FM-CW wave from an object, a mixer for mixing the transmitted wave and the received wave with each other to produce a beat signal, a frequency analyzing means for frequency analysis of the beat signal produced in the mixer, a detection peak determining means for determining, as a detection peak, any peak signal equal to or larger than a detection threshold value among peak signals obtained based on a result of the frequency analysis of ascending-side and descending-side frequencies by the frequency analyzing means, and an object detecting means adapted to calculate at least one of a distance from a subject vehicle to an object and a speed of the subject vehicle relative to the object, based on the ascending-side and descending-side detection peaks obtained in the detection peak determining means,

wherein said object-detecting system further includes a travel locus presuming means for presuming a travel locus of the subject vehicle, and a road-side object peak determining means for determining at least a portion of the detection peaks as being a detection peak provided due to a road-side object, based on the presumed travel locus of the subject vehicle, and

wherein the object detecting means is adapted to calculate at least one of the distance from the subject vehicle to the object and the speed of the subject vehicle relative to the object, based on the detection peaks other than the detection peaks of the

road-side objects.

2. An object-detecting system for a vehicle according to claim 1, wherein said road-side peak determining means is adapted to dispose a plurality of detection peaks on coordinates with a detecting direction and a peak frequency used as respective parameters, and to determine an arrangement of detection peaks resembling the travel locus presumed by the travel locus presuming means as being detection peaks provided due to the road-side objects.

3. An object-detecting system for a vehicle, comprising a transmitting/receiving means for transmitting an FM-CW wave and receiving a wave resulting from the reflection of the FM-CW wave from an object, a mixer for mixing the transmitted wave and the received wave with each other to produce a beat signal, a frequency analyzing means for frequency analysis of the beat signal produced in the mixer, a detection peak determining means for determining, as a detection peak, any peak signal equal to or larger than a detection threshold value among peak signals obtained based on a result of the frequency analysis of ascending-side and descending-side frequencies by the frequency analyzing means, and an object detecting means adapted to calculate at least one of a distance from a subject vehicle to an object and a speed of the subject vehicle relative to the object, based on the ascending-side and descending-side detection peaks obtained in the detection peak determining means,

wherein said object-detecting system further includes a subject vehicle position detecting means for detecting the current position of the subject vehicle, map information storing means for storing map information, a road shape presuming means for presuming the shape of a road in a traveling direction of the subject vehicle based on a subject vehicle position information detected by the subject vehicle position detecting means and the map information provided from the map information storing means, and a road-side object peak determining means for determining at least a portion of detection peaks as being a detection peak provided due to a road-side object, based on the presumed shape of the road in the traveling direction of the subject vehicle, and

wherein the object detecting means is adapted to calculate at least one of the distance from the subject vehicle to the object and the speed of the subject vehicle relative to the object, based on the detection peaks other than the detection peaks of the road-side objects.

4. An object-detecting system for a vehicle according to claim 3, wherein said road-side object peak determining means is adapted to dispose a plurality of detection peaks on coordinates with a detecting direction and a peak frequency used as respective parameters and to determine the arrangement of detection peaks resembling the shape of the road presumed by the road shape presuming means as being a detection peak provided due to the road-side object.

5. An object-detecting system for a vehicle, comprising a transmitting/receiving means for transmitting an FM-CW wave and receiving a wave resulting from the reflection of the FM-CW wave from an object, a mixer for mixing the transmitted wave and the received wave with each other to produce a beat signal, a frequency analyzing means for frequency analysis of the beat signal produced in the mixer, a detection peak determining means for determining, as a detection peak, any detection peak signal equal to or larger than a detection threshold value among peak signals obtained based on a result of the frequency analysis of ascending-side and descending-side frequencies by the frequency analyzing means, and an object detecting means adapted to calculate at least one of a distance from a subject vehicle to an object and a speed of the subject vehicle relative to the object, based on the ascending-side and descending-side detection peaks obtained in the detection peak determining means,

wherein said object-detecting system further includes a road-vehicle communication means capable of providing information relating to the shape of a road in a traveling direction of the subject vehicle by carrying out the communication with a transmitting means mounted on the road, and a road-side object peak determining means for determining at least a portion of the detection peaks as being a detection peak provided due to the road-side object, based on the information relating to the shape of the road in the traveling direction of the subject vehicle provided by the road-vehicle communication means, and

wherein the object detecting means is adapted to calculate at least one of the distance from the subject vehicle to the object and the speed of the subject vehicle relative to the object, based on the detection peaks other than the detection peaks of the road-side objects.

6. An object-detecting system for a vehicle according to claim 5, wherein said road-side object peak determining means is adapted to dispose a plurality of detection peaks on coordinates with a detecting direction and a peak frequency used as respective parameters, and to determine an arrangement of detection peaks resembling the shape of the road provided by the road-vehicle communication means as being detection peaks provided due to the road-side objects.

7. An object-detecting system for a vehicle according to any of claim 1, wherein, when any of the ascending-side detection peaks is determined as being the detection peak provided due to the road-side object, said road-side object peak determining means determines the descending-side detection peak corresponding to the ascending-side detection peak as being a detection peak provided due to the road-side object.

8. An object-detecting system for a vehicle according to any of claim 2, wherein, when any of the ascending-side detection peaks is determined as being the detection peak provided due to the road-side object, said road-side object peak determining means

determines the descending-side detection peak corresponding to the ascending-side detection peak as being a detection peak provided due to the road-side object.

9. An object-detecting system for a vehicle according to any of claim 3, wherein, when any of the ascending-side detection peaks is determined as being the detection peak provided due to the road-side object, said road-side object peak determining means determines the descending-side detection peak corresponding to the ascending-side detection peak as being a detection peak provided due to the road-side object.

10. An object-detecting system for a vehicle according to any of claim 4, wherein, when any of the ascending-side detection peaks is determined as being the detection peak provided due to the road-side object, said road-side object peak determining means determines the descending-side detection peak corresponding to the ascending-side detection peak as being a detection peak provided due to the road-side object.

11. An object-detecting system for a vehicle according to any of claim 5, wherein, when any of the ascending-side detection peaks is determined as being the detection peak provided due to the road-side object, said road-side object peak determining means determines the descending-side detection peak corresponding to the ascending-side detection peak as being a detection peak provided due to the road-side object.

12. An object-detecting system for a vehicle according to any of claim 6, wherein, when any of the ascending-side detection peaks is determined as being the detection peak provided due to the road-side object, said road-side object peak determining means determines the descending-side detection peak corresponding to the ascending-side detection peak as being a detection peak provided due to the road-side object.

13. An object-detecting system for a vehicle according to any of claim 1, wherein, when any of the descending-side detection peaks is determined as being a detection peak provided due to the road-side object, said road-side object peak determining means determines the ascending-side detection peak corresponding to the descending-side detection peak as a detection peak provided due to the road-side object.

14. An object-detecting system for a vehicle according to any of claim 2, wherein, when any of the descending-side detection peaks is determined as being a detection peak provided due to the road-side object, said road-side object peak determining means determines the ascending-side detection peak corresponding to the descending-side detection peak as a detection peak provided due to the road-side object.

15. An object-detecting system for a vehicle according to any of claim 3, wherein, when any of the descending-side detection

peaks is determined as being a detection peak provided due to the road-side object, said road-side object peak determining means determines the ascending-side detection peak corresponding to the descending-side detection peak as a detection peak provided due to the road-side object.

16. An object-detecting system for a vehicle according to any of claim 4, wherein, when any of the descending-side detection peaks is determined as being a detection peak provided due to the road-side object, said road-side object peak determining means determines the ascending-side detection peak corresponding to the descending-side detection peak as a detection peak provided due to the road-side object.

17. An object-detecting system for a vehicle according to any of claim 5, wherein, when any of the descending-side detection peaks is determined as being a detection peak provided due to the road-side object, said road-side object peak determining means determines the ascending-side detection peak corresponding to the descending-side detection peak as a detection peak provided due to the road-side object.

18. An object-detecting system for a vehicle according to any of claim 6, wherein, when any of the descending-side detection peaks is determined as being a detection peak provided due to the road-side object, said road-side object peak determining means determines the ascending-side detection peak corresponding to the

descending-side detection peak as a detection peak provided due to the road-side object.